

96. That Chapin was predisposed to favor the CBS system was apparent from the testimony which he gave. To illustrate, part of Chapin's testimony consisted of a comparison of the RCA color receivers with the CBS color receivers. Chapin stated that the CBS receivers were superior to the RCA receivers because the RCA receivers were too big and too complex. This testimony related to certain receivers having over 100 tubes used by RCA in the early part of the color hearings.

97. Chapin made no reference to the RCA tri-color tube receivers demonstrated by RCA. These receivers are substantially of the same physical size as present commercial model black and white receivers. One type of the RCA tri-color tube receiver used only 46 tubes, another used only 37 tubes—only 10 more than the commercial model black and white receiver of comparable type.

98. These receivers were demonstrated informally to members of the Commission's staff on March 23, 1950. It was on the very day that Chapin saw that demonstration that he prepared the exhibit on which he based his testimony comparing the CBS color receivers with the RCA color receivers. His testimony was given on April 11, after the informal demonstration of the simplified and compact receivers and after the formal demonstrations on the record on April 6, 1950. But Chapin took no account of these simplified receivers in his direct testimony.

[fol. 903]

*The Condon Committee*

99. The Commission's technical judgments are wholly at variance with the judgments of a highly expert and competent committee of independent scientists, who were commissioned to study available color television systems nearly two months before the Notice instituting these proceedings before the Commission (Annex C to Exhibit D to the Complaint).

100. This committee was organized at the request of the Chairman of the Senate Committee on Interstate and Foreign Commerce to give "sound, impartial, scientific advice" on color television. The Committee was headed by Dr. Edward U. Condon, Director of the National Bureau of Standards of the United States Department of Commerce and "was a small group of scientific persons

of repute, none of whom are employed by or have any connection directly or indirectly with any radio licensee or radio-equipment manufacturer." (ibid, p. iv)

101. In its Report, which was printed by the Government as Senate Document No. 197 of the 81st Congress, 2d Session, and widely distributed among members of Congress and the public weeks before the Commission's First Report the Condon Committee considered at length the color systems proposed, and analyzed the present and potential performance of those systems. This analysis was based on the testimony given before the Commission during the hearing, the demonstrations before the Commission and certain other demonstrations and tests. Although the Condon Committee did not recommend the adoption of any specific system, this distinguished group of scientists did determine which of the systems was superior in respect [fol. 904] of the technical performance characteristics upon which the choice of a color system depends. The introduction to the Report concludes:

"It is hoped that the report will provide a comprehensive and understandable basis on which the technical factors may be considered *in arriving at a decision.*"

102. The first four of the performance characteristics which the Condon Committee stated were "of paramount importance in comparing color television systems" were Resolution, the Flicker-Brightness Relationship, Continuity of Motion, and Effectiveness of Channel Utilization. As will be shown, the Commission's Reports either ignore or seek to minimize the advantages of the RCA system over the CBS system in respect of three of these four essential performance characteristics.\*

### *Resolution*

103. Resolution means the number of picture elements within the television picture area. The greater the number of picture elements, the greater the amount of detail or resolution in the picture.

104. In discussing resolution, the Commission's First Report compares the CBS color system with the black and white system and also compares the RCA system with the

present black and white system. The vital and determinative comparison of the RCA color system with the CBS color system is never made, and the discussion is carefully [fol. 905] worded so that the significance of the difference between the two color systems is wholly obscured.

105. Even using the Commission's own figures as to the resolution afforded by the RCA color system, however, the fact is that the RCA color system has 134,000-200,000 picture elements per picture as against the 80,000 picture elements of the CBS system. The poor resolution provided by the CBS 1940 6-megacycle field sequential color system was a principal reason why CBS went in 1946 to a 16-megacycle field sequential color system. The resolution of the 1940 system was simply not good enough. But the resolution of the 1950 6-megacycle field sequential system adopted by the Commission is even poorer than the resolution of the 1940 system which had about 100,000 picture elements.

106. The difference in the resolution of the RCA system and the resolution of the CBS color system is an important and fundamental system difference. The superior resolution of the RCA system is a fundamental long-range advantage of the RCA system over the CBS system which has been fully recognized by the Condon Committee.

107. The Commission in 1940-1941 recognized the importance of a television system providing more detail and greater clarity. But in the Commission's present action actual picture detail and clarity are not given weight.

108. The Commission in 1947, in rejecting the CBS 16-megacycle system and referring to the desirability of narrow band color systems, stated that "It should be emphasized that narrowing the bandwidth should not be at the expense of \* \* \* picture detail". But in the Commission's present action this principle is repudiated.

[fol. 906] *Flicker-Brightness Relationship*

109. The flicker-brightness relationship refers to the fact that television, like motion pictures, provides the illusion

\* The difference between the RCA and CBS systems with respect to Continuity of Motion, the third performance characteristic considered by the Condon Committee, is relatively slight.



of continuity and motion through a series of pictures. As in motion pictures, the light on the television screen is cut off between successive pictures. If the rate of repetition of the picture is too low, the light on the screen will appear to blink on and off and the picture will flicker. The higher the rate of picture repetition, the greater is the illusion of continuous illumination. This permits the use of higher picture brightness without the effect of flicker.

110. The controlling aspect of a television system with respect to flicker is the field repetition rate. If the field rate is too low, flicker is annoying and induces severe visual fatigue.

111. The field rate of the RCA color system is 60 per second; the comparable figure for the CBS system is 48 per second. Although the CBS system has a color field rate of 144 per second, the effective field rate of that system is 144 divided by 3 (colors) or 48 fields per second.

112. In the Commission's First Report, the discussion of the flicker-brightness relationship is concentrated upon the possibility of improving the flicker-brightness performance of the CBS system through the use of long-persistence phosphors, *an apparatus development* which will be equally available to all systems but cannot be used in CBS disc-type apparatus.

113. The difference in the field repetition rate of the RCA and the CBS color systems makes it possible for the [fol. 907] RCA system to have, without objectionable flicker, nine times the brightness of the CBS system. This fact is wholly ignored in the Commission's Reports, although RCA's advantage exists no matter what the apparatus considerations may be.

114. The advantage of the RCA system in making possible pictures which are nine times brighter, without objectionable flicker, than the pictures obtainable with the CBS system is an important and fundamental system difference. It is a fundamental long-range advantage of the RCA system over the CBS system which has been fully recognized by the Condon Committee. Yet this difference is not even mentioned in the Commission's Reports.

115. The fundamental facts with respect to flicker and brightness in the CBS system have not changed since the Commission's decision in 1947. But in 1947 the Commis-



sion said with respect to flicker and brightness in the CBS system:

"Another possible solution was suggested by Dr. Goldmark [of CBS]. He testified that it was possible to increase brightness without changing the frame [or field] rate and still avoid flicker. This could be done, he stated by employing tubes with a slow decay [ie. long persistence] phosphor. Dr. Goldmark admitted that such tubes have not yet been developed. Moreover, R.C.A. testified that it had experimented with such tubes and had found them to be very complicated. Witnesses for DuMont testified that that company had also conducted experiments with tubes having slow decay phosphor but found them objectionable. Apparently such tubes resulted in objectionable [fol. 908] trails being left on the face of the tube. It is not possible to resolve this dispute until tubes of the type described by Dr. Goldmark are in fact developed and are sufficiently field tested so that it can be stated with assurance that they will work satisfactorily.

"In summary, the Commission is unable to conclude from the evidence that the brightness of Columbia picture is adequate for home use under normal circumstances or that it can achieve such brightness without encountering objectionable flicker. In the absence of more convincing evidence on the points, the Commission is of the opinion that on the point of brightness and flicker alone, the risk of approving the Columbia standards at this time is that color television might be forced to limp along with a picture that is not sufficiently bright for general home use or is subject to objectionable flicker."

#### *Effectiveness of Channel Utilization*

116. Color television, like the present black and white television system, will be broadcast in a 6-megacycle channel. The available channel width is used by a television system to obtain picture detail, brightness without flicker and continuity of motion. As the Condon Committee has noted, a system whose performance is inadequate in any of these respects makes relatively ineffective use of the channel.

117. In the Commission's Reports, the relative effectiveness of channel utilization of the RCA and CBS systems [fol. 909] not even mentioned. The Condon Committee, however, found,

"The effectiveness of channel utilization of the RCA color system is the highest of all the systems"

proposed to the Commission during the color hearings. This omission is one of the most striking of all of the omissions in the Commission's First and Second Reports.

118. The radio spectrum is a priceless national asset. Its conservation has been entrusted to the Commission. Space in the spectrum is severely limited by the needs of other radio services. Yet the Commission has abdicated the responsibilities which have thus been entrusted to it by ignoring the relative effectiveness of the RCA and CBS color systems in using the 6-megacycle channel to provide high resolution and flicker-free brightness.

119. In doing so, the Commission has again departed from the basic regulatory principles which it has followed since 1940 and which are enjoined upon it by the statutory obligation to "encourage the larger and more effective use of radio in the public interest."

120. In adopting the present black and white system of 525 lines in 1941, and rejecting a 441 line system which was then discussed, the Commission said that its preference for the 525 line system over the 441 line system was based on the fact that the 525 line system "... more fully exploit[s] the possibilities of the frequency bands allocated for television."

121. The advantage of the RCA system over the CBS system in more fully utilizing the 6-megacycle channel is [fol. 910] a fundamental and long-range system advantage. As the Condon Committee found:

"The techniques for improving channel utilization include line interlace, dot interlace, the mixed-highs method, and the use of long-persistence receiver screen materials to reduce flicker."

122. The RCA system makes full use of the techniques of line interlace,\* dot interlace\*\* and the mixed-highs\*\*\* method. Because of the high field rate in the RCA system (60 fields per second), the use of long persistence phosphors to reduce flicker is unnecessary. In any event, use of long persistence receiver screen materials is an apparatus matter, and all the different types of receivers demonstrated by RCA can make use of such long persistence phosphors.

123. The CBS system, on the other hand, does not include the use of either dot interlace or the mixed-highs method. The technique of dot interlace cannot be incorporated in the CBS system without a change in the transmission standards for that system, and the technique of mixed-highs cannot be utilized by the CBS system even with such a change in standards. Furthermore, as the Commission's First Report recognizes, long-persistence screen materials cannot be used to improve the poor flicker-brightness performance of the CBS disc receivers upon [fol. 911] which so many of the advantages claimed by the Commission for the CBS system depend entirely.

124. Finally, the Report of the Condon Committee concludes "the real limit to future progress is that imposed by the nature of the scanning standards, not by present equipment limitations or present relative costs." The nature of the RCA scanning standards leaves the most room for future progress.

125. It should also be noted that the Condon Report is

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\*\* Dot interlace is a scanning method used to change the scanning order of the picture dots in successive fields so as to achieve greater definition in a given bandwidth.

\*\*\* Mixed-highs refers to the mixing of the high frequency components of a color television signal. This makes it possible to use shades of gray in a color television picture to add fine detail just as shades of gray are used in color printing to furnish the fine detail of the printed picture.

\* Line interlace means scanning one set of lines for one field and scanning another intervening set of lines for another field. This is done to reduce the flicker by increasing the number of fields for a given number of complete pictures.



not based upon theory alone. The Report is also based upon actual observation of the performance of the three proposed systems—observation as extensive as that of the Commission and observation by those who were qualified to interpret what they saw.

*The Leading Electronics Experts Have Been Repudiated*

126. There appeared before the Commission responsible experts of many television industry committees and of many industry laboratories. Dr. Du Mont and Dr. Goldsmith of the Allen B. Du Mont Laboratories appeared. Dr. Baker of the General Electric Company, D. B. Smith of Philco, Dr. Lee De Forest, Dr. Engstrom and Dr. Brown of RCA appeared. Independent experts such as Donald Fink of the Joint Technical Advisory Committee appeared. All these people, and others, testified to the effect.

- a) that a compatible system should be adopted,
- b) that a high-quality system should be adopted, and
- [fol. 912] c) that the Commission should not stultify research by accepting anything less.

127. All these people have high and honorable reputations in their professions. All these people have heretofore been respected and heeded by the Commission. None of these people advocated the adoption of the CBS system.

128. In addition, the Commission's Reports are in conflict with the Report of the Condon Committee in respect of technical matters of controlling importance. Although the Condon Report made available to the Commission significant scientific conclusions, neither Commission Report mentions the Condon Committee nor its Report. Moreover, I am advised that one of the members of the Commission has stated in a public address that the Commission did not even consider the Report of the Condon Committee in reaching its decision.

129. Never before in my experience has a supposedly technical expert tribunal acted contrary to the best technical advice that can be had.

*The Results and Prospects of Research Have Been Ignored*

130. The advantages of the RCA system over the CBS system, which were considered of primary significance by the experts of the Condon Committee and of the industry,

stem from differences in the fundamentals of the RCA and CBS color systems. These system fundamentals include the number of lines and fields and the method of scanning the image which is to be televised. The performance advantages resulting from these fundamental system differences are disregarded by the Commission.

131. In contrast to the Condon Committee, the differences between the two systems which are emphasized in the Commission's Reports are differences relating to apparatus rather than inherent system differences.

132. For example, the Commission's Reports find fault with RCA's color fidelity, an observation obviously based upon early demonstrations of *principles*, not of apparatus perfection. Yet the fundamental fact regarding color fidelity is stated by the Condon Committee: "There is, as noted previously, no basic difference in the color fidelity of the three color systems".

133. The dynamic nature of research is such, however, that even though the laboratory apparatus first demonstrated by RCA (on October 10, 1949) was deficient in actual color rendition, the improvement by April, 1950 was such that it was the subject of unsolicited comment on the record by two members of the Commission. Dr. Goldmark (who is now Vice President and Chief Research Engineer of CBS) admitted on the record that RCA's color picture had "improved a thousand percent" between October, 1949 and April, 1950.

134. Furthermore, the all-electronic receivers used by RCA in connection with its system were greatly simplified during the course of the hearings. These simplified receivers used the RCA tri-color, direct-view picture tube which was demonstrated in April of 1950, and which is *a development which at least one leading television expert thought would be impossible.*

[fol. 914] 135. In spite of this there is no favorable reference in either Report of the Commission to the development of the tri-color tube by RCA and its demonstration on April 6, 1950. All the Commission has to say about this tri-color picture tube, which has been hailed as a major ac-

complishment by the scientific world, is that such a tube is not "an assured fact." \*

136. The only basis given for this statement by the Commission is the fact that the tube was not demonstrated until "late in the proceedings." The disingenuousness of characterizing the tri-color tube, which was as concrete to those who saw it as anything could be, as not being "an assured fact" is shown by the Commission's statement that on the basis of the record long-persistence phosphors are practical and that they may overcome the flicker limitation of the CBS system.

137. This finding, favorable to CBS, is made although CBS did not "demonstrate" a long-persistence phosphor until April 26, 1950, twenty days after demonstration of the RCA tri-color tube. I am informed that only a green phosphor was "demonstrated" and that only a stationary slide was used in the "demonstration" of this long-persistence phosphor so that the tendency of such phosphors to cause "smearing" on the face of the picture tube could not be tested. For years "smearing" has been one of the principal difficulties in the use of long persistence phosphors.

138. Not only has the Commission refused to credit much of the evidence in the record with respect to the RCA [fol. 915] system, even as concrete evidence as the RCA tri-color tube, but the Commission has also refused to take into account additional information which has been fully available to it after the end of the hearings.

139. This is a sharp reversal of the Commission's previous principles, which fully recognized the obligation of a regulatory body in a highly dynamic electronic art to at least keep itself abreast of scientific research and development. As the Commission stated in 1940:

"It would be a violation of its statutory obligations for the Commission to disregard any facts which might foreclose a proper exercise of its duty to fix transmission standards . . ."

In contrast to the statement that the tri-color tube is not an assured fact, on October 31, 1950 the Commission requested that RCA turn over a tri-color tube to CBS.



140. The Commission has wholly disregarded the continuing results of RCA's research. On July 31, 1950, RCA filed with the Commission its Progress Report, the text of which is included as Annex D to the RCA Comments (Exhibit D to the Complaint). The RCA Progress Report was submitted to the Commission a month before the Commission's first Report, and over two months before the issuance by the Commission of its Order.

141. The achievements reported in the Progress Report confirmed the testimony of industry experts during the hearings as to improvements possible with the RCA system and associated apparatus. If the testimony had been accepted, there would, of course, have been no need to consider a report which said that improvements which had been promised during the hearings had actually been accomplished. But before a decision was adopted which rejected both the testimony and the RCA system on the basis [fol. 916] of defects which the Progress Report said had already been eliminated, it was the duty of the Commission to keep itself informed and to observe for itself the accomplishments stated in the Progress Report.

142. The accomplishments which RCA has made with respect to the apparatus used with its system are not matters which leave room for differences of opinion. They are concrete and indisputable. For example, the single direct-view tri-color tube demonstrated by RCA on April 6, 1950, was not a finished product in respect of the number of phosphor dots on the face of the tube. Consequently, this tri-color tube did not utilize all the picture detail made available by the RCA system. However, in subsequent developments (which were stated at the hearings to be in progress) the number of phosphor dots on the face of the RCA tri-color direct-view tube has been nearly doubled. Consequently, the tri-color tube now provides resolution capabilities comparable to the full picture detail afforded by the RCA color system.

143. The improvement in the brightness of the RCA tri-color tube is another concrete example of the significant apparatus developments which have taken place since the close of the hearings. In its then state of development, the tri-color tube demonstrated on April 6, 1950, had a maxi-

mum highlight brightness of 7 foot lamberts,\* and much was made of this fact by the Commission. Development continued, however, and by July 31st the brightness of the tri-color tube had been increased to 20 foot lamberts. The tri-color tubes developed since July 31st by RCA have attained even greater highlight brightness. These bright- [fol. 917] nesses exceed the brightness of many present commercial models of black and white receivers.

144. The Commission's disregard of its obligation to take account of all the relevant facts, when necessary to reach a decision in rule-making proceedings which will be in the public interest, is shown by its failure to consider certain demonstrations made by Hazeltine Electronics Corporation. The Hazeltine demonstration, as stated by the Condon Committee, provided "conclusive proof" of the efficacy of the mixed-highs technique in providing a color image having substantially the same quality as an equivalent simultaneous color transmission in a channel three times as wide. The use of mixed-highs is an important advantage of the RCA system which cannot be achieved by the CBS system. The Commission ignored the informal Hazeltine demonstration and in its First and Second Reports treated the use of mixed-highs as a defect rather than an advantage of the RCA system.

145. The Commission's disregard of its obligations is also shown by its failure to consider the new all-electronic, compatible color system which was announced by the General Electric Company. The Commission similarly ignored the new incompatible system announced by Color Television Incorporated. The announcement of these two new compatible systems was made more than a month before the Order was issued adopting the incompatible CBS system. The Commission's refusal even to consider these new compatible systems is plain and unmistakable proof of the Commission's disregard of the public interest in a fully compatible color system.

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\* A footlambert is the unit for measuring the brightness of light reflected from a surface.

[fol. 918] RCA Petition for Further Viewing by Commission

146. The Commission's First Report, upon which the Order adopting the CBS system is based, expressed doubts as to the RCA system—doubts with respect to its color fidelity, the brightness of its receivers and even its resolution. It was largely on the basis of such doubts that the RCA system has been put aside.

147. Prior to the issuance of the Commission's Order adopting the CBS system, RCA filed a Petition which would have enabled the Commission to resolve its "doubts" about the RCA system and correct its errors. This Petition asked the Commission:

"(a) during the period December 5, 1950 to January 5, 1951, to review the improvements made in the performance of the RCA system; and

"(b) during the period to June 30, 1951, to view experimental broadcasts of color signals under the RCA, CBS, CTI and other systems, before making a final determination in respect of color standards."

It was further stated in that Petition:

"During the period December 5 to January 5 we will show the Commission the improvements made in the performance of the RCA system, with particular reference to those points about which the Commission expressed doubts. Some of those improvements are set forth in the RCA Progress Report of July 31, 1950. [fol. 919] "By June 30 we will show that the laboratory apparatus which RCA has heretofore demonstrated has been brought to fruition in a commercial, fully-compatible, all-electronic, high-definition system of color television available for immediate adoption of final standards."

148. The Petition was denied, and in its Second Report the Commission concluded that no improvements in existing systems warranted a reopening of the record. This conclusion was arrived at by the Commission without even



looking at the improvements referred to in the RCA Petition.

#### The Refusal to Let the Public Have a Compatible System

149. The effect of the Order is to limit commercial broadcasting of television in color to the CBS system. The order deprives the public of a compatible system.

150. No finding has been made by the Commission that commercial broadcasting of color on the RCA system or any other compatible color system would be contrary to the public interest. Nor would such a finding have any support in the record.

151. The commercial broadcasting of color on the RCA color system could not injure the public interest because the RCA color system is fully compatible. RCA color transmissions are reproduced on existing black and white [fol. 920] receivers as high-quality black and white pictures. In addition, if receivers capable of operating on the CBS color system should be manufactured and sold those receivers too would reproduce RCA color transmissions as black and white pictures, just as they reproduce in black and white standard black and white broadcasts.

152. If the RCA color system actually has the defects which the Commission thinks it perceives, color receivers for the RCA system will never be widely sold and the RCA color system will never be widely used by broadcasters.

153. But if an all-electronic, high-definition, compatible color system, such as the RCA color system does have the advantages claimed for it by impartial scientists and experts, the public will choose the RCA color system.

154. The Commission's action in denying the public commercial broadcasting in color on standards compatible with black and white standards—on a system receivable on every receiver now owned by the public and which will be owned by the public in the foreseeable future—is not an action in the public interest. It is arbitrary and capricious action which is contrary to the public interest.

### The Injury Resulting From the Order

155. The irreparable injury resulting from the unjustifiable standardization upon the CBS system is plain. As the Commission stated in its May 28, 1940 Report:

[fol. 921] "In the light of the demonstrated fluidity of the art and its current movement toward a higher level of efficiency, it was recognized that the acceptance of any fixed set of standards would entail the undesirable consequences of checking or retarding meritorious research."

In its First Report, the Commission has recognized that great developments in color television are being made. But the Commission, in violation of its duty, has chained those developments to a television system which the science of electronics has long since passed by.

156. All the research and development on the RCA all-electronic, high-definition, compatible color television system has, to a large extent, been jettisoned by the Order. There can be no incentive for research when its results are by administrative fiat unusable. Advances in technical research depend largely upon the incentive of the scientists and engineers who are engaged in research to succeed. Unless the Commission's decision in these proceedings is to last, it should never have been made. If it is to last, the development of a system permitting high-quality compatible color standards is fruitless.

157. The astounding progress of this newest addition to the list of American industrial accomplishments is due wholly to the unlimited incentive which has been the stimulus of its laboratories and research engineers. Never before has the opinion of the illustrious group of scientists upon which this industry has thus far depended been so abruptly rejected and so gratuitously insulted. The feeling of hostility toward their efforts, engendered by the condemnation of this Commission, is bound to result in a diminution [fols. 922-926] of the inventive flow from this group. The low ceiling of the system adopted is certain to discourage further improvement. The Commission has standardized on the hand-crank car when already the self-starting streamlined model is in being.

158. The effect of the Order upon RCA's effort and the millions of dollars invested in its system is apparent. The effect of the Order upon television research and development, and upon the public interest is equally apparent.

C. B. Jolliffe.

Sworn to before me this 8th day of November, 1950.

George J. Higney, Notary Public, State of New York, No. 24-6894500, Qualified in Kings County, Cert. Filed with Kings Co. Clk. and Reg., Cert. Filed with N. Y. Co. Clk. and Reg., Term Expires March 30, 1952 (Notarial Seal).

[fol. 927] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

AFFIDAVIT OF WALTER A. BUCK

COMMONWEALTH OF PENNSYLVANIA,  
County of Montgomery, ss.:

WALTER A. BUCK, being duly sworn, deposes and says:

1. I am Vice President and General Manager of the RCA Victor Division of the Radio-Corporation of America (hereinafter called "RCA"), one of the plaintiffs herein. I am familiar with the television manufacturing business [fol. 928] in general and RCA's television manufacturing business in particular. I have read the Complaint and the affidavit of C. B. Jolliffe.

2. This affidavit is made in support of plaintiff's motion for a temporary or interlocutory injunction and a temporary restraining order restraining, enjoining and suspending the promulgation, operation and execution of the Order of the Federal Communications Commission (hereinafter sometimes called the "Commission"), adopted October 10, 1950, effective November 20, 1950, fixing standards for the commercial broadcasting of color television. This affidavit is also submitted in opposition to defendants' and intervenor's motions to dismiss the Complaint or for summary judgment.

3. I am the holder of a Bachelor of Science degree in



Electrical Engineering and a Master of Science degree in Mechanical Engineering from Kansas State Agricultural College (now Kansas State College of Agriculture and Applied Science). I also hold the degree of Master of Business Administration from the Graduate School of Business Administration of Harvard University. I am a member of the Board of Directors of RCA. I have been associated with RCA since 1948, having been President of Radiomarine Corporation of America in 1948 and, since January, 1949, a Vice President of RCA. Prior to associating myself with RCA, I was a member of the United States Navy, retiring in 1948 with the rank of Rear Admiral. From 1946 to 1948, I was Chief of the Bureau of Supplies and Accounts and Paymaster General of the United States Navy.

[fol. 929] Growth of the Television Industry Under Present Television Standards

4. RCA, through the RCA Victor Division, is now and for some time has been extensively engaged in the manufacture and sale of television transmitting and receiving equipment, including tubes.

5. Since RCA began the sale of television receivers in 1946, the number of such receivers which it has manufactured and sold has steadily increased. The public has already invested over a half billion dollars in RCA television receivers.

6. Upon an industry-wide basis an estimated 9,000,000 customers will have invested over two billion dollars in black and white television receivers on the effective date of the Order.

7. The television transmitting and receiving equipment manufactured and sold by RCA has been designed in accordance with the standards adopted in 1941 by the Federal Communications Commission for commercial black and white television service. This equipment has been scientifically designed in order to give to the public the best possible television service at the lowest possible cost.

8. The initiation, development and growth of the television broadcasting and receiving industry would not have been possible had not the standards set by the Commission been of high quality and had they not been adopted with the

express view to protecting the public against obsolescence. [fol. 930] 9. The public acceptance of black and white television based upon the existing black and white standards has been unequalled in the history of any industry or public service.

10. The incredibly large sale of television receivers would not have been possible without the concurrent initiation, development and growth of a black and white television broadcast service which, in turn, has also depended upon the sale of receivers described above.

11. It is on this foundation that the entire television industry rests. The quality of the present service, the improvements and reductions in price to the public that have been made and the incredible expansion of the industry as a whole, are all due to the fact that manufacturers could rely and build upon a single set of enduring, high-quality standards.

#### RCA's Investment in the Manufacture of Television Transmitting and Receiving Equipment

12. At the present time, the investment of RCA in the manufacture, sale and servicing of television transmitting and receiving equipment, including tubes, is \$76,000,000, and approximately \$55,000,000 of this investment is devoted to the manufacture, sale and servicing of television receiving equipment.

13. RCA employs at the present time approximately 28,000 persons in connection with the manufacture, service and sale of television equipment, and 21,000 of these persons are employed in connection with the manufacture, sale and servicing of television receiving equipment.

#### [fol. 931] Immediate and Irreparable Injury Resulting From the Commission's Order

14. The promulgation of the Commission's Order has irreparably injured RCA. If the Order is put into operation, it will continue to irreparably injure RCA.

*Impairment of Market Acceptance of Present Television Receivers*

15. The promulgation of the Commission's Order adopting an incompatible color service has resulted in a state of confusion in the television industry and in the minds of the purchasing public. The public does not know, and cannot determine, to what extent future television broadcast service will be in color and to what extent it will be in black and white. The public does not know, and cannot now determine, when, to what extent and at how great a cost the necessary adapters and converters will be available. All the public does know is that present television receivers will not be able to receive programs transmitted pursuant to the standards adopted by the Commission's Order without various modifications and then only by accepting a degraded picture./

16. Consequently, manufacturers of television receivers do not know, and cannot determine, at least for a considerable period of time, whether a public demand will exist for the present type of receiver, new color receivers or various combinations of the two, if and when color programs using the CBS system become commercially available.

[fol. 932] 17. Any continued unsettlement of the market must inevitably adversely affect all manufacturers, sooner or later. It has already been encouraged by the widely publicized statements of the Columbia Broadcasting System, Inc. (hereinafter called "CBS"). Frank Stanton, President of CBS on October 15, 1950 broadcast a statement over the CBS network advising prospective purchasers of television receivers that if they refrained from buying present receivers for six months, they might save some money. In still another statement, Arthur Godfrey, during his program "Arthur Godfrey's Talent Scouts" broadcast over the CBS television net work on October 23, 1950, is reported to have advised the public to "wait about six months" before buying a television receiver. This unsettled condition of the market for television receivers may be expected to increase as CBS continues and expands its campaign publicizing and promoting its incompatible color system.

18. This confused and unsettled condition has impaired the market acceptance of present television receivers and



it can be expected that such a condition will continue should the Commission's Order be put into operation.

19. Despite the existence and continuance of this condition, RCA, if it is to continue its television manufacturing operations and maintain its payroll of some 21,000 employees engaged in the manufacture and sale of television receivers, is obliged to make substantial commitments for future production.

20. RCA's production and sale of television receiving equipment is planned many months in advance. Commitments are entered into, components are purchased or contracted for, and manufacturing facilities are expanded in order to meet a predicted demand. This is illustrated by the necessary forward planning and scheduling by RCA in order to place on the market a "line" of television receivers which are reflected in their major aspects in a chart annexed hereto Exhibit A. In order to place a "line" of RCA television receivers on the market, it is necessary for the first step to be taken some ten months previously and additional steps and commitments are required to be taken and made during the succeeding months well in advance of the commencement of production itself.

21. In addition to the time required by RCA itself for the development of styling and model shop samples, a period of three to six months prior to the commencement of production is required by outside suppliers to enable them to furnish cabinets and machine parts which will be used in production. Likewise, RCA must commit itself to other suppliers of production materials three to four months in advance of the dates on which such materials will be used in production.

22. On October 26, 1950, RCA had commitments to suppliers for various materials and components for the manufacture of the current television merchandise in the total amount of approximately \$55,000,000 and its inventory of materials as of September 30, 1950 amounted to approximately \$15,000,000. Such commitments and inventory are necessary to cover production requirements through February, 1951. Additional commitments will have to be made in the immediate future in order to secure sufficient materials for March production. The period in advance of production during which materials must be ordered is

[fol. 934] steadily increasing because of the increasing government requirements for defense mobilization. .

23. The television receivers now being produced from materials and supplies on hand and committed for will have a total market value of approximately \$100,000,000 when completed, on the assumption that a reduction in demand does not force a reduction in price.

*Unacceptability of CBS Color Television Receiving Equipment*

24. The experience of the radio industry shows that conversions which involve receiver modifications are not widely accepted and do not usually result in satisfactory performance.

25. The modification of existing receivers needed to receive programs in black and white might be accomplished by the installation of a special adapter. RCA has estimated that the cost to the public of such an adapter will be at least \$50, plus installation charges. After this modification, by purchasing and installing an additional device advocated by CBS and called a disc type converter, consisting primarily of a spinning mechanical disc and its housing, it is possible for some receivers to obtain color transmissions pursuant to the proposed system. The cost of such a converter has been estimated at approximately \$100.

26. However, even after incurring this expense for such an adapter and converter, present television set owners will sustain a loss of picture size if their picture tube is larger [fol. 935] than 12½ inches. This limitation is due to the fact that the disc must be more than twice as large as the face of the picture tube in the receiver. As a practical matter this fact limits the size of a direct-view receiver picture to 12½ inches, since a disc larger than 26" in diameter whirling at a high speed is not considered practical. The seriousness of this limitation is shown by the fact that over 99% of the television receivers in the hands of the public are direct-view receivers and it is estimated that approximately 90% of all receivers sold today are receivers having picture tubes of 16 inches or larger.

*The Impairment of Growth of Television*

27. The Commission's adoption of the incompatible color system will further irreparably injure RCA and other manufacturers by lowering the present high-quality standards of black and white television and at the same time increasing the cost of television receivers designed to receive broadcasts using this system.

28. The public confronted with inferior black and white and color reception at a cost substantially above the present cost, can be expected to resist sales efforts in support of receivers designed to bring them such inferior service. Such a reaction will not only impair, but will seriously stifle, the growth of the television industry.

29. The promulgation of the Commission's Order has worked irreparable injury to RCA, the television industry [fol. 936] and the consumer. If the Order becomes effective it can only serve to increase this injury.

Walter A. Buck.

Sworn to before me this 8th day of November, 1950.

Robert E. Baker, Notary Public, 214 Dudley Ave., Narberth, Pa., My Commission Expires January 2, 1956 (Notarial Seal).



### Development Procedure on Present Television Line

Material breakdown prepared and sourced with vendors. Purchase Orders prepared and issued.  
Black Line Drawings scheduled from Engineering to Purchasing.  
Engineering models produced from components made in Model Shop for testing.  
Pre-Production run of chassis built from vendors components.  
Field tests made by Engineering Division and Service Company changes recommended.  
Quantities determined and prices established.  
Production started.  
Line introduced to Field Sales Organization together with Merchandising and Advertising Plan.  
Line introduced to Distributors and orders taken for July, August and September delivery.  
Line introduced to Dealers by Distributors nationally, and announced to public.



[fol. 943] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

AFFIDAVIT OF JOHN H. MACDONALD

STATE OF NEW YORK,

County of New York, ss.:

JOHN H. MACDONALD, being duly sworn, deposes and says:

1. I am Vice President in charge of Finance and Treasurer of the National Broadcasting Company, Inc. (hereinafter called "NBC"), one of the plaintiffs in the above entitled action. I have read the Complaint and the affidavits of C. B. Jolliffe and Walter A. Buck.

[fol. 944] 2. This affidavit is made in support of plaintiffs' motion for a temporary or interlocutory injunction, and for a temporary restraining order, restraining, enjoining and suspending the promulgation, operation and execution of the Order of the Federal Communications Commission (hereinafter called the "Commission") adopted October 10, 1950, and setting standards for the commercial broadcasting of color television. This affidavit is also made in opposition to defendants' and intervener's motions to dismiss or for summary judgment.

Television Broadcasting Services of NBC

3. NBC was the pioneer in the broadcasting of television programs. On June 29, 1936, NBC began experimental broadcast transmissions of all-electronic black and white television in conjunction with the field testing program of RCA. On April 30, 1939, NBC inaugurated a regular program service to the public on its New York experimental television station. When commercial television operations were authorized by the Commission, NBC began regular commercial television broadcasts over its New York station, WNBT, on July 1, 1941, the effective date of the commercial black and white standards.

4. NBC owns and operates, pursuant to authorization of the Commission, a television broadcasting station in each of the following cities: New York, N. Y., Chicago, Ill., Washington, D. C., Cleveland, Ohio and Los Angeles, Calif.

2



5. NBC also operates a television network broadcasting business, providing television programs to affiliated stations in 58 other cities throughout the United States.

[fol. 945] 6. NBC has more than 2400 employees engaged in television broadcast activities and estimates that its television broadcast activities provide employment to more than 3700 people who are not employees of NBC.

7. NBC has expended substantial sums of money for the construction of its five television broadcasting stations, for the construction of facilities for its television network operation, and for equipment utilized at its television stations and in its operations. NBC's expenditure for such construction and equipment is more than \$8,800,000.

8. In addition to the foregoing expenditures, NBC has made definite and detailed plans for the continuing expansion of commercial television service. These plans have been founded upon the expectation that the number of television receiving sets in the hands of the public would continue to increase in the future as it has in the past.

9. As part of these plans for the expansion of television operations, NBC has entered into commitments with artists and program producers guaranteeing payment of substantial sums of money to such artists and program producers for television programs to be broadcast in the future. Such commitments are in excess of \$3,000,000 for the twelve months period September, 1950 through August, 1951.

10. Further, in order to provide plant facilities for its ever-expanding television operations, NBC has entered into lease arrangements guaranteeing payment of substantial sums for the use of theatres and other building space for use as television broadcasting studios. The total financial [fol. 946] commitments involved in such lease arrangements are in excess of \$10,000,000.

11. NBC derives all its television revenue from the operation of its own television stations and from the operation of its television network by the sale of time, programs and production facilities to advertisers. Such sales are made to advertisers of products and services who are desirous of having their advertising messages transmitted by television and received in homes and other places.

12. The present black and white television service broadcast by NBC involves expenditures of millions of dollars



a year for time and programs. It is estimated that for the broadcasting industry as a whole, the expenditures for time and programs to provide the black and white television program service now are in the neighborhood of \$150,000,000 per year. Part of this cost is borne by television broadcast stations; part by networks; and part by advertisers.

13. The ability of NBC and other broadcasters to sell advertising time on television programs and the amounts that can be charged therefor is primarily dependent upon the number of television receiving sets in the hands of the public capable of receiving such advertising messages and those that can reasonably be expected to be in the hands of the public in the immediate future and the number of viewers of television programs. The number of such sets is what determines the maximum "circulation" which an advertiser may expect. Fundamentally it is circulation and the expectation of its continued increase which makes possible the public's program service.

[fol. 947] 14. During the past four years the number of television receiving sets in the hands of the public has steadily increased. On January 1, 1947 an estimated 15,000 television receiving sets were in the hands of the public. On January 1, 1948 the number was estimated at 200,000; on January 1, 1949 at 1,000,000; on January 1, 1950 at 4,000,000; on October 1, 1950 more than 8,000,000; and as of the effective date of the Order it is estimated that approximately 9,000,000 black and white television receiving sets will be in the hands of the public.

15. NBC's charges to advertisers, and the advertiser's willingness to pay, are based not only on the number of sets outstanding at any particular time, but also upon the increase in the television audience which experience indicates should be experienced in the future.

### The Irreparable Injury Resulting From the Order

16. The entire black and white television service has been based upon the fact that each television receiver can receive all television programs and upon the reciprocal fact that each television broadcaster can reach all outstanding television receivers.

17. We have based our plans and made our commit-

ments on the expectation that these facts would continue to be true—that television receivers would continue to receive all programs and that all broadcasters would continue to reach all receivers.

18. The Order now, for the first time, adopts standards for the commercial broadcast of color television programs [fol. 948] which cannot be received, either as color programs or as black and white programs, on the 9,000,000 receivers outstanding as of the effective date of the Order.

19. The effect of the Order is to irreparably injure NBC by depriving NBC of the opportunity to broadcast in color without losing its entire audience. The Commission's Order precludes the public from getting the benefits of a compatible color system and precludes the broadcaster from using a compatible color system.

20. Many advertising clients of NBC desire their programs to be broadcast in color but they do not want to lose their present audience. Color broadcasting without loss of audience cannot be carried on under the Commission's Order. The Commission's action, by denying to NBC the right to employ a compatible system of color television, prevents NBC from accommodating the desires of these advertising clients.

21. The effect of this upon the program service available to the public is very serious. If compatible color broadcasting were permitted, the programs of these advertisers would be available both in color and in black and white. Under the Order, the opportunity of seeing these programs in color is denied to the audience because of the incompatibility of the color standards.

22. Color adds great audience appeal for many products. Without color, television's sales potential cannot reach its fullest growth. If NBC were allowed to broadcast in color without loss of audience, a new field of service to advertisers would be created. Under the Commission's Order, this market is denied to NBC.

[fol. 949] 23. Television competes with other advertising media such as newspapers and magazines. These can use color without loss of audience. The failure of the Commission to approve the compatible system of color television denies to NBC the opportunity to employ color in its popular television programs without loss of audience, and

thus denies to NBC and to television one of the advantages available to other advertising media.

24. Television not only competes with other media for advertiser support; it also competes with other forms of entertainment for the attention of the public. Color adds to the entertainment value of television and therefore contributes to attracting and holding audiences. The failure of the Commission to authorize the use of a compatible system of color television denies to NBC the ability to compete most effectively for its audience. This in turn impairs advertiser support of NBC's television.

25. It is the television channel licensed to the broadcaster which makes it possible for him to carry on business operations. Spectrum space is extremely scarce and the broadcaster, of necessity, must utilize his television channel to the maximum extent possible. The Commission, by the adoption of its Order requires, in effect, that the broadcaster must utilize his television channel either to broadcast black and white programs or, on the other hand, to broadcast color programs. To do both at the same time under the Commission's Order would require two television channels or twice as much space in the spectrum. If the broadcaster had not been deprived of the opportunity to broadcast compatible color television, it would have been possible for him to use one television channel for broadcasting simultaneously to both his present black and white audience and the color television audience.

[fol. 950] 26. If NBC should broadcast incompatible color programs in choice time, it would detract substantially from its revenues. Because the audience for such color programs would be virtually non-existent, little if any revenue would be derived from the program. In addition, NBC would lose the substantial revenue which it had been receiving theretofore from the black and white programs in the choice time.

27. In its development of black and white television broadcasting during the first years of operation, NBC made substantial expenditures in excess of income from television operations. This was necessary in order to present programs of wide appeal which would develop audiences. Advertiser support of these programs was inadequate because there was little or no audience. This course of operation must be repeated if the CBS incompatible system



must be used for broadcasts of color television. On the other hand, if NBC is permitted to broadcast color television on a compatible system it would not have to repeat this process in building up its audience.

28. NBC and other broadcasters may operate their stations only under licenses granted by the Commission which must be renewed from time to time. Their investment, however, must be made on the reasonable expectation that their licenses will be renewed. Without this reasonable expectation of renewal of their licenses, no investments such as are necessary for a television broadcasting service could be made.

29. If the Order is permitted to go into effect NBC and other broadcasters will face the dilemma of broadcasting in color with the incompatible CBS system—with the result—[fols. 951-958] ing total loss of audience, and loss of advertising support and revenue for the periods of such broadcasts—or run the risk that the Commission will attempt to adopt the view that by failing to broadcast in color by the CBS incompatible method the broadcaster has not operated in the public interest and therefore should not have his license renewed.

3. The effect of the Order will thus be either substantially to dilute the television audience on the reasonable expectation of which NBC has made the substantial financial investment and commitments described above, or place the licenses of NBC and other broadcasters in jeopardy, each of which will irreparably injure NBC's television broadcasting business.

John H. MacDonald.

Sworn to before me this 8th day of November, 1950,  
George J. Higney, Notary Public, State of New  
York, No. 24-6894500, Qualified in Kings County,  
Cert. Filed with Kings Co. Clk. and Reg., Cert.  
Filed with N. Y. Co. Clk. and Reg., Term Expires  
March 30, 1952 (Notarial Seal)

[fol. 959] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

AFFIDAVIT OF WALTER M. NORTON

STATE OF ILLINOIS,

County of Cook, ss.:

WALTER M. NORTON, being duly sworn, deposes and says:

1. I am President of RCA Victor Distributing Corporation (hereinafter called the "Distributing Corporation"), a corporation organized under the laws and a resident of Illinois, with its principal office at 666 North Lake Shore Drive, Chicago, Illinois. I am familiar with the radio and [fol. 960] television industry in general and with the sale at wholesale of television home receivers in particular.

2. This affidavit is made in support of plaintiff's application for a temporary or interlocutory injunction and a temporary restraining order restraining, enjoining and suspending the promulgation, operation and execution of the Order by the Federal Communications Commission (hereinafter sometimes called the "Commission"), referred to in the Complaint. This affidavit is also made in opposition to defendants' and intervenor's motions to dismiss the Complaint or for summary judgment.

Operations of Distributing Corporation

3. The Distributing Corporation is engaged in the sale of television receivers and other products manufactured by the RCA Victor Division at wholesale to dealers through four branch offices located in Chicago, Illinois; Kansas City, Missouri; Detroit, Michigan; and Buffalo, New York. The dealers to whom sales of these products are made by the Distributing Corporation are located in the general wholesale trading areas of those four cities.

4. The principal executives of the Distributing Corporation have their offices in Chicago and the affairs of the Distributing Corporation are managed from here. The Distributing Corporation leases for its use approximately 63,000 square feet of space in buildings in Chicago, for which it pays total annual rentals of approximately \$47,000.

5. As of December 31, 1949, the Distributing Corporation had approximately 150 employees in Chicago, and as [fol. 961] of September 30, 1950, approximately 170 employees. The payroll for the calendar year 1949 for Chicago employees was approximately \$665,000, and for the nine-month period ending September 30, 1950, approximately \$535,000.

6. The annual dollar sales volume of the Distributing Corporation to customers in Chicago amounts to many millions of dollars, and the inventories and fixed assets to maintain these sales operations represent a substantial investment.

#### Immediate and Irreparable Injury Resulting From the Order

7. The Commission's Order adopting the incompatible CBS color system has been widely discussed in newspapers published in the areas in which the Distributing Corporation does business. In these newspaper articles great stress has been laid on the fact that present black and white receivers will not receive CBS color transmissions even in black and white unless extensive and expensive modifications are made in such receivers. Copies of typical newspaper articles are being separately filed with the Court.

8. On Sunday night at 6:00 P. M. on October 15, 1950 Frank Stanton, President of Columbia Broadcasting System, Inc., went on the air over the CBS network to discourage people from buying present models of black and white television receivers. This was followed by a statement made by Arthur Godfrey during the program "Arthur Godfrey's Talent Scouts" at 8:30 P. M. on October 23, 1950, over the CBS television network advising prospective purchasers of television receivers to "wait about six [fol. 962] months" before buying a television receiver. Both statements were given considerable publicity.

9. At the present time the Distributing Corporation has on hand a substantial inventory of television receivers. The pipe lines of television distribution are customarily kept full—that is the Distributing Corporation supplies the needs of the dealers who sell to the public sufficiently far in advance so that the dealers have a supply of sets



on hand to meet their needs for a period of weeks. The Distributing Corporation does not have firm sales contracts with dealers covering this inventory. Under the generally accepted practice of the industry, the dealers with whom the Distributing Corporation does business are free to refuse to accept delivery of any more television receivers, and the Distributing Corporation is without redress for such refusal.

10. Since the publication of the Commission's Order, retailers supplied by the Distributing Corporation have reported that there has been a softening of the market for present television receivers. Some of these retailers have also reported that they have received cancellations of orders from their customers, who have assigned as the reason therefor the adoption of a color system which cannot be received by the present receivers.

11. This, despite the fact that prior to November 1st when the 10% Federal excise tax went into effect on television sets, dealers bought heavily from distributors and manufacturers. That was done because the excise tax, when it became effective, did not apply to sets in the hands of dealers but only of manufacturers. In addition, the recent imposition of credit controls was responsible for un-[fols. 963-965] usual buying. Notwithstanding both these factors, the falling off of traffic is now beginning to be noticeable.

12. That fact that the Order here authorizes commercial color broadcasting has not been overlooked by dealers who realize that the beginning of "commercial color broadcasting" means a beginning of a business as distinguished from an experimental color service.

13. Increased sales resistance from prospective buyers is being felt. The intended effect of the CBS broadcasting advising people to hold off for six months has been had.

14. It is not possible for the Distributing Corporation to stop accumulating inventory to await public demand since the time lag necessary in large manufacturing operations requires that the Distributing Corporation always order ahead in order to keep a large stock in warehouse here in Chicago.

15. Irreparable injury is also occurring to the Distributing Corporation because it cannot go forward with cer-

tainity to make the commitments that it should for inventory rental space and employment and payroll.

Walter M. Norton.

Sworn to before me this 9th day of November, 1950,  
James V. Gorman, Notary Public, Cook County,  
Illinois, My Commission Expires January 28, 1951  
(Notarial Seal).

[fol. 966] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

SUPPLEMENTARY AFFIDAVIT OF WALTER M. NORTON—Filed  
November 9, 1950

STATE OF ILLINOIS,  
County of Cook, ss:

Walter M. Norton, being duly sworn, deposes and says:

1. I am President of RCA-Victor Distributing Corporation, one of the plaintiffs herein.
2. The documents to which this affidavit is affixed are copies of the newspaper articles to which reference is made in paragraphs numbered 7 and 8 of my affidavits, filed concurrently herewith, in this cause in support of plaintiffs' application for a temporary or interlocutory injunction and a temporary restraining order and also in opposition to defendants' and intervenor's motions to dismiss the Complaint or for summary judgment.
3. Said documents are true and correct photostatic copies of said newspaper articles and were prepared at my direction and under my supervision.
4. Said newspaper articles were taken from the publications named for the dates stated and were collected and identified at my direction and under my supervision.

Walter M. Norton.

Subscribed and sworn to before me this 9th day of  
November, 1950. James V. Garman, Notary Public,  
Cook County, Illinois.

My Commission expires Jan. 28, 1951.



NEWS  
BUFFALO, N. Y.  
Oct. 12, 1950

# FCC Gives Go-Ahead To CBS's Incompatible Color System for TV

By the Associated Press

WASHINGTON, Oct. 12.—A threat of court action and further major delays hung over home color television today despite an official go-ahead for the Columbia Broadcasting System's method.

The Federal Communications Commission announced late Wednesday that it had made final its previous tentative selection of the CBS system as the national color television plan. CBS immediately promised to "promote (it) to the hilt."

But Isidor Goldberg, president of the Pilot Radio Corporation, said in New York his company will seek an injunction to stay the FCC's action. Declaring that the commission should have delayed the decision for another nine months, Mr. Goldberg said "we very definitely plan injunctive proceedings."

The action also came under fire from the Radio Corporation of America, developer of one competing color TV system ruled out by the FCC. The other was developed by Color Television Inc.

David Sarnoff, chairman of RCA, said the public interest will not be served by forced adoption of a "degraded" and incompatible system.

## Unsound, Says Sarnoff

What engineers call the incompatibility of the CBS system is the fact that its color signals cannot be picked up, even in black and white, by existing sets, of which nearly 8,000,000 are in the hands of the public.

"We regard this decision as scientifically unsound and against the public interest," Mr. Sarnoff said. "The hundreds of millions of dollars that present set owners would have to spend and that future set owners would have to pay to obtain a degraded picture reduces the order to an absurdity."

Mr. Sarnoff also hinted that RCA will not accept the FCC decision without a fight, saying:

"Regardless of what anyone else may feel called upon to do, RCA will continue its efforts to advance the bedrock principles on which the sound future of color television can be built and will be built."

In Passaic, N. J., Dr. Allen B. Du-

Mont, one of the TV manufacturers opposing the CBS plan, declared that "we don't consider the mechanical receiver practical and we won't manufacture it."

## Programs Promised Seen

In effect, the FCC's decision granted Columbia an exclusive franchise in the color television field for its system, based on a mechanical color wheel. CBS has promised to make its color patents available to everyone in the industry. The royalties involved have been estimated at \$50,000,000.

In advance of the injunction threat from Pilot, a set manufacturer, CBS President Frank Stanton had expressed confidence that "all segments of the industry will now unite" to get color before the public.

Columbia's new authority is dated to become effective Nov. 20, and Mr. Stanton asserted that within two months CBS will have some 20 hours of color programs on the air each week, much of it networked over the intercity cables.

Mr. Stanton has said that if the set manufacturing industry generally does not respond with production of sets built to receive Columbia color, his company will move to "stimulate interest among businessmen" in a new \$50,000,000 company devoted to turning out CBS color receiving equipment.

## Incompatibility The Issue

CBS, strictly a broadcaster, reiterated that it does not intend itself to enter the manufacturing field.

Manufacturers who have opposed the CBS system's incompatibility also object that because of the color wheel, CBS color pictures will be limited to screens of 12½ inches or less.

Columbia has countered the incompatibility argument by asserting that existing and future sets may be adapted to receive the color signal in black and white with a gadget costing \$15 to \$25; and that with an additional \$50 to \$75 outlay, they can be converted to receive color broadcasts in color. CBS has estimated that brand

new CBS color receivers can be retailed for \$200 and up, depending upon picture size.

## Parallel Systems Visioned

The Webster-Chicago Corporation announced in Chicago that it will shortly market devices to adapt present sets. It said adapters to permit black-and-white reception of CBS color signals would sell for about \$25 and converters to permit color reception on present sets for \$50 to \$75. But the company said large-scale production cannot be expected before the first of the year.

Two of the seven FCC Commissioners dissented to the authority given Columbia Wednesday. One, George E. Sterling, objected to "closing the door" on other color systems. Commissioner Frieda B. Henneock wanted a delay a final action until June 30, 1951, to "provide further time for the development of a practical compatible color system."

The FCC is proposing that all black-and-white receivers to be manufactured in the future have a widened tuning range in order to pick up present black-and-white signals and also CBS color signals in black and white. This is recognition of the prospect that color TV and black-and-white TV will probably exist side by side for years to come.

## Small Screen Used

Mr. Sterling objected that this FCC proposal was sprung suddenly on manufacturers only last month and noted the almost unanimous response from the set-makers that assembly designs could not be changed quickly.

Mr. Sterling favored a commission-industry conference to discuss the problem and said the FCC majority had "closed the door" on other possible systems, or system improvements, which may come in the future.



CHICAGO DAILY TRIBUNE  
CHICAGO, ILL.  
Oct. 13, 1950

## Color Adapter for Television

(Story in adjoining column)



(Associated Press Wirephoto)

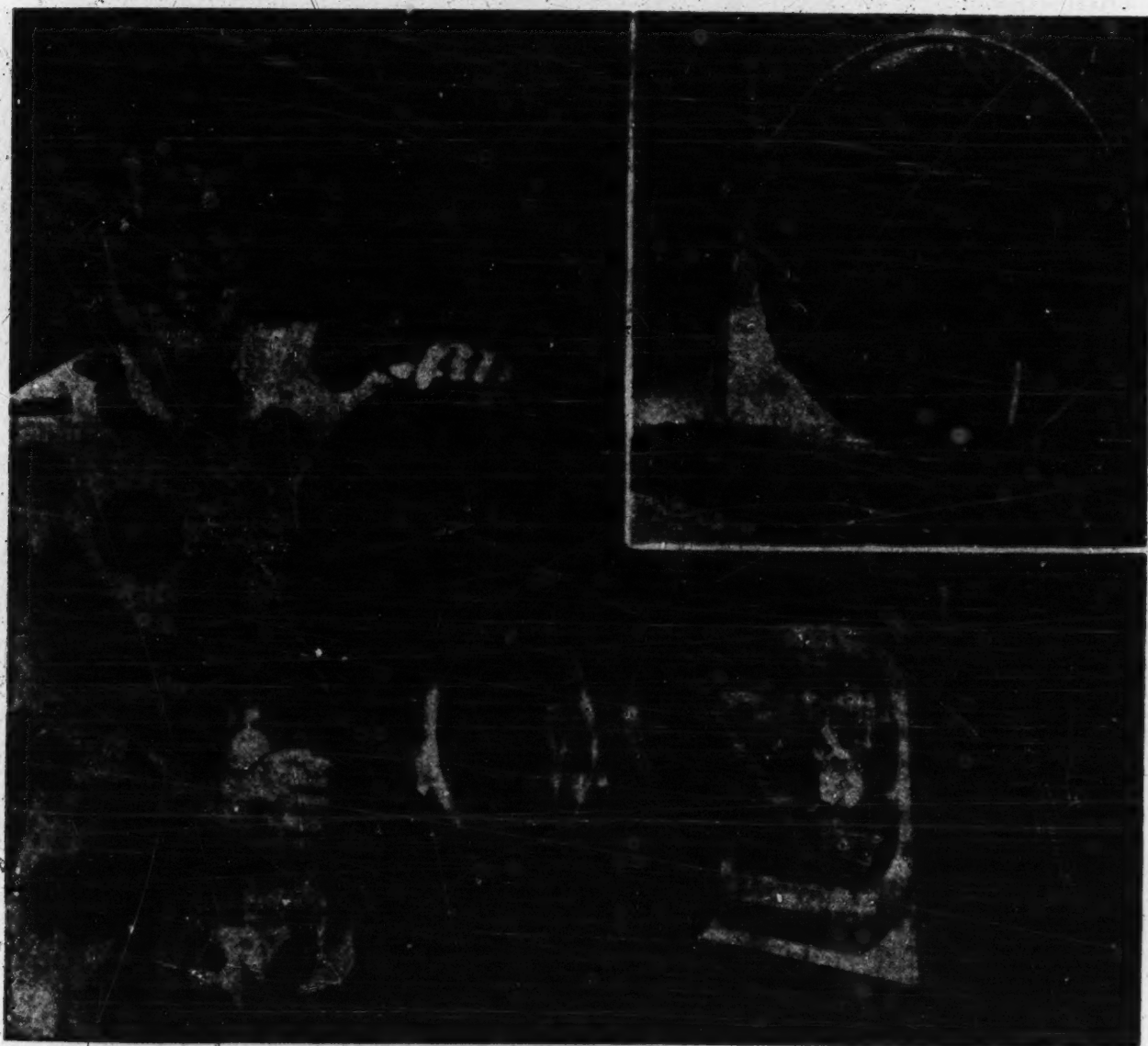
Standard 10 inch television table model set adapted to receive color broadcasts by means of a CBS adapter and converter. The handle has three positions—for receiving black and white programs, for receiving color programs in black and white, and for receiving color programs in color. Color disk is divided into red, green, and blue segments which spin across the face of the viewing tube.

CHICAGO SUN-TIMES  
CHICAGO, ILL.  
Oct. 12, 1950



CBS adapter (below) is the gadget needed on your TV set to receive color broadcasts—in black and white. You will still need another gadget—a converter—before you can see the programs in color.

CHICAGO DAILY NEWS  
CHICAGO, ILL.  
Oct. 12, 1950



**TV COLOR CONVERTER** that will be produced by Webster Chicago Corp. is adjusted before a television screen by Rosemary Lynch. This equipment, an experimental laboratory model, would enable present sets to receive color, according to the manufacturer. It is made to slide away from the set when black and white is desired. Circuit changes in the set are necessary before color pictures can be received clearly. Inside the color disk that whirls in front of the picture tube.

TIMES  
DETROIT, MICH.  
Oct. 12, 1950

## Color TV of CBS Gets U.S. Approval

WASHINGTON, Oct. 12 (INS)—The color television system developed by the Columbia Broadcasting System was formally approved as standard for the industry yesterday by the Federal Communications Commission, which set Nov. 20 as the date commercial color TV can go on the air for the general public.

The FCC decision to adopt CBS's color plan on a nationwide basis came over staunch opposition from leading segments of the television industry.

In backing up its tentative decision of Sept. 1, the FCC reiterated that color systems developed by the Radio Corp. of America and Color Television, Inc. fall short of the commission's standards.

Isidor Goldberg, president of the Pilot Radio Corp., said in New York his firm would seek an injunction to stay the FCC's action.

Manufacturers took a dim view of CBS color and claimed it cannot be received on the existing 8,000,000 black-and-white sets throughout the nation.

On the other hand, the manufacturers said that RCA and CTI systems are compatible. The set makers said that production of new sets incorporating the CBS system would probably shoot up set costs by \$10 to \$100 merely to receive CBS color in black and white.

But the Webster-Chicago Corp. announced in Chicago that it would shortly market devices to adapt present sets. It said adapters to permit black and white reception of CBS color signals would sell for about \$25 and converters to permit color reception on present sets for \$50 to \$75.

The company said large-scale production could not be expected before the first of the year.

The FCC scheduled a hearing at an undetermined later date to consider the views of those manufacturers who might wish to produce only black-and-white sets.

CBS hinted in the recent FCC hearings it was prepared to enter into manufacturing of new color sets if its system were adopted.

RCA's petition to delay the color decision and CTI's plea to reopen FCC hearings were turned down simultaneously with yesterday's order.

Indications are that the nation's manufacturers will require several months to change production lines in order to turn out sets to receive the CBS color telecasts

if they desire to produce them at all.

Among the mounting opposition received by FCC from industry was a charge by the Philco Corp. that the FCC exceeded powers granted it by Congress in asking manufacturers to comply with the then proposed adoption of CBS color because the system was incompatible.



CHICAGO DAILY NEWS  
CHICAGO, ILL.  
Oct. 12, 1950

# What Battle Over Color TV Means to You and Your Set

## Station WBKB To Use Method

BY JACK MARLEY

The lines were being drawn today for a mighty propaganda assault on the American people over color television.

On one side was the Columbia Broadcasting System, which Wednesday won FCC approval for commercial operation of its color system.

On the other side was the Radio Corporation of America, and about 50 per cent of the nation's TV receiver manufacturers, who are strongly opposed to the CBS system.

THE FIRST step in the battle will be in court. RCA or some other manufacturer is expected momentarily to seek a court order nullifying the FCC decision. A temporary injunction will be sought first, then a permanent injunction.

CBS, meanwhile, unless it is halted by court order, will begin putting color programs on the air in New York.

They also will give any other broadcaster permission to use their system for transmitting color, in return for payment of royalties.

STATION WBKB said Thursday it may put CBS color telecasts on the air late next month.

WBKB, an independent station, is the Chicago outlet for CBS TV programs. The station was waiting Thursday to hear from CBS.

A spokesman said he believes the network will want to make Chicago a key outlet for color telecasts. He said that WBKB has no plans to originate color telecasts, and will telecast only shows that come over the coaxial cable.

THE COLOR telecasts would have to be during daytime, and on a very limited basis, because the station is almost sold out on its afternoon and evening programming.

The other stations, WENR-TV, WGN-TV and WNBQ, have no plans for color telecasting.

CBS lost no time in beginning its publicity barrage for its color system. Arthur Godfrey, the network's most potent salesman on both radio and TV, devoted much of the time on his network radio show Thursday morning talking about the CBS color.

Frank Stanton, president of the network, sat in the control room throughout the broadcast.

The big question is, who will be watching the color telecasts? Set manufacturers are dead set against retooling and converting their plants for color sets and for gadgets that would enable present sets to receive color.

ONE MANUFACTURER so far has announced it will produce color converters. Webster-Chicago Corp., which has been working with CBS, said it plans to market converters around the first of the year.

The opposition of the manufacturers is not on love for RCA or dislike of CBS. It is based on self-interest. They feel that the CBS system is inferior.

They feel that other systems now being developed will be superior. The RCA color system, which RCA claims will be perfected within a year, would put on the air a picture that could be picked up by any present set in black and white, with no changes whatever in the set.

IF YOU OWN a TV set, and CBS color telecasts begin in your city, here is how you would be affected:

Your set in its present state would not pick up the color telecasts.

If and when manufacturers make an adapter available, for somewhere between \$15 and \$50 you could buy an adapter, attach it to your set, and pick up the color telecasts in black and white. The picture would be inferior to your present picture. It would be more coarse.

FOR AN additional \$80 to \$120, you could buy a converter to attach to your set, which would bring in the color picture.

The converter is a round, transparent color disc, which would be synchronized to whirl in front of your present picture tube.

If you have a 15-inch picture tube, the color disc would be about 25 inches in diameter.

An alternative would be to purchase a new color receiver. CBS has estimated the price at a minimum of \$200, but manufacturers say that is completely unrealistic, and talk in terms of \$400 or \$500.

NEWS  
DETROIT, MICH.  
Oct. 12, 1950

# Color TV Delay Due as FCC Rules for CBS Plan

WASHINGTON, Oct. 12.—A threat of court action and further major delays hung over home color television today despite an official go-ahead for the Columbia Broadcasting System's method.

The Federal Communications Commission (FCC) announced late Wednesday that it had made final its previous tentative selection of the CBS system as the national color television plan. CBS immediately promised to "promote it to the hilt."

But Isidor Goldberg, president of the Pilot Radio Corp., which manufactures TV sets, said in New York that his firm would seek an injunction to stay the FCC's action. Declaring that the commission should have delayed the decision for another nine months, Goldberg said "we very definitely plan injunctive proceedings."

## RCA ALSO OBJECTS

The action also came under fire from the Radio Corporation of America (RCA) developer of one competing color TV system ruled out by the FCC. The other was developed by Color Television, Inc.

David Sarnoff, board chairman of RCA, said in New York that the public interest will not be served by forced adoption of a "degraded" and incompatible system.

What engineers call the incompatibility of the CBS system is the fact that its color signals cannot be picked up, even in black and white, by existing sets, of which nearly 8,000,000 are in the hands of the public.

"We regard this decision as scientifically unsound and against the public interest," Sarnoff said. "The hundreds of millions of dollars that present set owners would have to spend and that future set owners would have to pay to obtain a degraded picture

Sarnoff also hinted that RCA will not accept the FCC decision without a fight, saying:

"Regardless of what anyone else may feel called upon to do, RCA will continue its efforts to advance the bedrock principles on which the sound future of color television can be built and will be built."

In effect, the FCC's decision granted Columbia an exclusive franchise in the color television field for its system, based on a mechanical color wheel. CBS has promised to make its color patents available to everyone in the industry. The royalties involved have been estimated at \$50,000,000.

In advance of the injunction threat from Pilot, Frank Stanton, CBS president, had expressed confidence that "all segments of the industry will now unite" to get color before the public.

## SET NETWORK PROGRAMS

Columbia's new authority is dated to become effective Nov. 20, and Stanton asserted that within two months CBS will have some 20 hours of color programs on the air each week, much of it networked over the intercity cables.

Stanton has said that if the set manufacturing industry generally does not respond with production of sets built to receive Columbia color, his company will move to "stimulate interest among businessmen" in a new \$50,000,000 company devoted to turning out CBS color receiving equipment.

CBS, strictly a broadcaster, reiterated that it does not intend to enter the manufacturing field itself.

Columbia has countered the incompatibility argument by asserting that existing and future sets may adapt to receive the color signal in black and white with a gadget costing \$15 to \$25; and that with an additional \$50 to \$75 outlay, they can be converted to receive color broadcasts in color.

CBS has estimated that brand new CBS color receivers can be retailed for \$200 and up, depending on picture size.

Manufacturers object that because of the color wheel, CBS color pictures will be limited to screens of 12½ inches or less.

## 3 ON FCC DISSENT

In order to carry out its decision, FCC is proposing so-called "bracket standards" for televising—that is, one standard for present black and white, and another for CBS color.

It is proceeding on the assumption that set makers will redesign future receivers to pick up both. Most of the manufacturers say this cannot be done until sometime next year.

Two of the seven FCC commissioners dissented to the authority given Columbia. One, George E. Sterling, objected to "closing the

door" on other color systems. Commissioner Frieda B. Hennock wanted to delay a final action until June 30, 1951, to "provide further time for the development of a practical compatible color system."

The FCC's long-range schedule calls next for consideration of allocating new television channels and for eventual lifting of the freeze on new TVA stations which has been in effect for more than three years. Indications are, however, that the freeze will not be lifted until well into 1951.



STAR  
KANSAS CITY, MO.  
Oct. 12, 1950

## A FUROR ON TV COLOR

INJUNCTION WILL BE SOUGHT  
AGAINST FCC DECISION.

Radio Pilot Corporation and  
R. C. A. Contend Ineffective  
Use of Columbia Method  
Is Unfair to Public.

Washington, Oct. 12 (AP)—A  
of court action and fur-  
major delays hang over  
is color television today, de-  
as an official go-ahead for the  
Columbia Broadcasting Sys-  
tem's method.

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the C. B. S. system as the na-  
tional color television plan.  
C. B. S. immediately promised  
to "promote (it) to the hilt."

### Decision Too Hasty.

But Isidor Goldberg, presi-  
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tion, said in New York his firm  
will seek an injunction to stay  
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The action also came under  
fire from the Radio Corporation  
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### Scientifically Unsound.

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millions of dollars that present  
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Sarnoff also hinted that R. C.  
A. will not accept the FCC de-  
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"Regardless of what anyone  
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B. S. has promised to make  
its color patents available to  
everyone in the industry. The  
royalties involved have been es-  
timated at 20 million dollars.

### Set to Make Adaptations.

The Webster-Chicago corpora-  
tion announced in Chicago that it  
will shortly market devices to  
adapt present sets. It said adapt-  
ers to permit black and white re-  
ception of C. B. S. color signals  
could sell for about \$25 and con-  
verters to permit color recep-  
tion on present sets for \$50 to  
\$75. But the company said large-  
scale production cannot be ex-  
pected before the first of the  
year.

In order to carry out its de-  
cision, FCC is now proposing so-  
called "bracket standards" for  
television—that is, one standard  
for present black and white, and  
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Most of the manufacturers say  
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time next year.

RETAILING DAILY  
NEW YORK, N. Y.  
Nov. 3, 1950

## Blame Color for Dip In Kansas City Sales

KANSAS CITY, Nov. 2.—Sales of  
television sets continue to sag, al-  
though action has not quite stopped  
completely. Retailers are inclined at  
present to blame the color con-  
trovercy more than any other single  
factor in public resistance to buy-  
ing.

It is admitted that the huge vol-  
ume done during the third quarter  
undoubtedly provided for the needs  
of the majority of ready customers,  
and that credit controls have put  
some people out of the market. Re-  
tailers do not expect a large-scale  
pick-up in business until the begin-  
ning of Christmas selling.



CHICAGO DAILY TRIBUNE  
CHICAGO, ILL.  
Oct. 14, 1950

# VIDEO SHARES FALL ON FIGHT OVER COLOR TV

## Losses Run to as Much as 2 Points

### 15 MOST ACTIVE STOCKS

(Figures after decimal point are eighths)

| Stock                    | Close | Net |
|--------------------------|-------|-----|
| 44,000 St. Regis Paper   | 31.1+ | 3   |
| 44,000 N Y Central       | 17.3+ | 1   |
| 22,000 Sun Bond          | 14.3+ | 1   |
| 22,000 North Pac         | 27.3+ | 4   |
| 21,000 Amer Rad & Pk     | 18.6+ | 1   |
| 20,000 Radio Corp        | 18.3+ | 3   |
| 19,700 Studebaker        | 28.3+ | 4   |
| 18,100 Penn RR           | 28.3+ | 1   |
| 17,500 Gen Motors        | 22.3+ | 1   |
| 17,500 Sunray Oil        | 19.3  | ... |
| 16,000 Loh Val RR        | 19.3+ | 3   |
| 16,000 Chi St P & Pac    | 17.1  | ... |
| 15,700 Economy Van       | 34.3+ | 3   |
| 15,300 Am Cab & Rad      | 6.6+  | 3   |
| 15,000 Am Rad & Std Bldg | 13.6  | ... |

New York, Oct. 13 (P)—Electronics shares took a thumping today in the stock market in the midst of a confused controversy over color television. Losses in that division ran to as much as 2 points a share and the only two minus signs in the list of 15 most active issues resulted from the color TV argument.

The radio-TV group headed lower from the start of the session on the strength of the decision Wednesday by the federal communications commission that the television industry must adopt the color TV system developed by the Columbia Broadcasting system. The order has brought wide protests from manufacturers.

#### Heads Downward Later

The two CBS common issues headed upward immediately along with Remington Rand which holds a contract for making CBS color equipment. The remainder of the market was comfortably higher at this time, too. By midday the whole market headed lower and with it went CBS and the others in the electronics group.

CHGO. HERALD-AMERICAN  
CHICAGO, ILL.  
Oct. 13, 1950

# TV Shares Lead Slow Mart Drop

NEW YORK, Oct. 13.—(P)—A slow decline today in the stock market smothered an early mild recovery movement. Overall there was a mixed price pattern that extended from extremes of 2 points lower to 3 higher.

The volume of trading came to an estimated 2,000,000 shares. It was noted that business slowed down immediately on price recessions.

Radio-television issues took the worst of the set-back in the midst of industry protests over the Federal Communication Commission's order to start CBS color television broadcasts.

Newsprint companies got strength from a \$10 a ton price increase announced by the Powell River Co. in Vancouver. International Paper and St. Regis made good gains.

Distillers tacked on fractions to more than a point, with Hiram Walker in the lead.

Lower were Admiral Corp., Philco, Radio Corp., Zenith, Motorola, CBS, Chrysler, Kennecott Copper, Allied Chemical, Du Pont, American Can, Coca Cola, Santa Fe, Union Pacific and American Tobacco.

Higher were Studebaker, Goodrich, Schenley, Distillers Corp.-Seagrams, Safeway Stores, American Woolen, Nickel Plate, Northern Pacific and Twentieth Century-Fox.

CHGO. DAILY NEWS  
CHICAGO, ILL.  
Oct. 13, 1950

# Most of TV Issues Sag; Distillers Up

NEW YORK.—(P)—There was a suggestion of higher price tendencies Friday in the stock market, but that is about as far as it got.

There was a thorough mixture of quotations, running from a few cents lower to as much as \$2 higher at the outside.

Most of the radio-television manufacturing issues started out lower, reflecting dissatisfaction with the Federal Communications Commission order giving the go-ahead to the Columbia Broadcasting System's method of color television.

• • •

CBS ISSUES headed higher by contrast, but within a comparatively short time they turned down with the rest of the radio-TV group, although CBS doesn't make sets.

Remington Rand, with a contract to make CBS color equipment, moved a little higher.

CHICAGO DAILY TRIBUNE  
CHICAGO, ILLINOIS  
Oct. 14, 1950

## COLOR TV FIGHT CUT SALES OF TELEVISION SETS

### Orders Are Canceled by Confused Public

New York, Oct. 13 (AP)—A confused public slowed its television set buying today as it groped for answers to the color television controversy.

A spot check across the nation by the Associated Press showed set sales had been curtailed moderately to sharply in many places since approval Wednesday of the Columbia Broadcasting System's color method by the federal communications commission.

In some places, dealers reported sales remained normal.

One informed source here said there had been heavy cancellations by customers of their orders with dealers and also of dealers' orders with distributors. This source said many dealers had stocked up heavily in anticipation of a buying rush to beat the 10 per cent federal tax on television sets that goes into effect Nov. 1.

#### Seek to Reassure Public

Many, however, expressed belief that once the public realized all the present black and white programs would continue and that color telecasts would be supplementary and at hours outside normal programming, sales would return to normal. Both sides sought to reassure the public on this score even as more manufacturers fired blasts at CBS color and CBS retorted hotly to some of the statements.

Much of today's controversy centered about statements by Robert W. Galvin, executive vice president of Motorola, Inc., of Chicago, at a news conference here.

Galvin said that to adapt a present type set to receive even black and white pictures from CBS color telecasts involved a major rewiring job on the set. He said it was of such magnitude it would void the underwriters' approval of the set as being free from fire hazard, and might complicate insurance claims in the event of fire originating in the set.

#### Obes Size of Task

CBS replied, "You can always make a fire hazard out of a set if you want to by not servicing it properly, but if the service man follows the manufacturers' instructions there should be no hazards in the changes needed to adapt sets to the CBS system."

Galvin said the rewiring necessary to adapt a set to the CBS system was so great it would overwhelm the facilities of the nation's service companies if they attempted to adapt the 8 million sets in use.

CBS said it had demonstrated to the FCC a plug-in adapter in which no internal rewiring of the set was necessary.

Galvin predicted the CBS color system would fail for lack of public interest and acceptance. CBS said it had received thousands of inquiries from persons wanting to know how soon they could get color and from service men want-

ing detailed instructions for converting sets, as well as inquiries from some manufacturers on how to produce color sets.

#### "Rube Goldberg System"

Galvin said that while from an engineering standpoint, sets with tubes of 16 and 19 inches diameter could be converted to receive color, it was a practical impossibility. CBS retorted it had converted sets of that size for color without great difficulty.

More criticism was directed at the motor driven spinning disk which the CBS system uses in its present form to produce color. Set maker F. A. D. Andrea called it a "Rube Goldberg mechanical system." Galvin said a disk big enough to produce color on a large screen set would look like a Ferris wheel. Michael Kaplan, president of Sightmaster corporation and of an association of smaller manufacturers, said adoption of the system had created "a chaotic manufacturing wilderness" in which CBS had no money invested since it did not make sets.

Attorneys for Isidor Goldberg, president of Pilot Radio corporation, who had said he would seek an injunction against the color action, issued a statement saying suit would be started sometime next week.